DOCUMENT RESUME

ED 297 931 SE 048 177

AUTHOR Showers, Dennis Edward
TITLE Nuclear Energy Assessment Battery. Form C.
PUB DATE [87]
NOTE 12p.; For a related document, see SE 048 178.
PUB TYPE Tests/Evaluation Instruments (160)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Achievement Tests; *Attitude Measures; Controversial Issues (Course Content); *Nuclear Energy; Science Education; Science Interests; *Science Tests; Secondary Education; *Secondary School Science; *Student Attitudes

ABSTRACT

This publication consists of a nuclear energy assessment battery for secondary level students. The test contains 44 multiple choice items and is organized into four major sections. Parts include: (1) a knowledge scale; (2) attitudes toward nuclear energy; (3) a behaviors and intentions scale; and (4) an anxiety scale. Directions are provided for each of the four sections and an answer key and scoring instructions are likewise included. (ML)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED297931

NUCLEAR ENERGY ASSESSMENT BATTERY

FORM C

Directions

Follow all instructions given to you by the person administering this test.

DO NOT WRITE ON THE TEST BOOKLET.

Use only #2 pencil to mark your answerts on the answer sheet.

This is a timed test. Do not begin working until you are told to do so. When the test proctor calls stop, put down your pencil, close the test booklet and place the answer sheet on top of the test booklet.

This test will not affect your grade in this or any other class.

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

STOP

DO NOT TURN THE PAGE UNTIL YOU ARE TOLD TO DO SO

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Dennis Edward Showers

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

BEST COPY AVAILABLE

SE 048 172

PART I - KNOWLEDGE SCALE

Directions

Read each statement. Choose the letter of the best answer that either completes the statement or provides the best answer to the question presented. Mark your answer sheet to indicate the choice of your answer.

1. Uranium fission results in

   A. energy.
   B. neutrons.
   C. radioactive fission fragments.
   D. all of the above.

2. The part of an atom with a negative electrical charge is the

   A. proton.
   B. neutron.
   C. electron.
   D. both B & C.

3. Which of the following is true?

   A. If a nuclear accident occurred there would be significant releases of radiation to the environment.
   B. Nuclear power plants have many safety systems to protect the environment from radiation releases.
   C. Any release of radiation to the environment is a sign of a nuclear accident.
   D. Any release of radiation into the environment is immediately harmful to living things.

4. Which part of an atom makes up the least amount of its weight?

   A. Electrons
   B. Protons
   C. Neutrons
   D. Molecules

5. Which of the following is not true?

   A. There is natural radiation in the air we breathe.
   B. Humans possess several naturally radioactive elements.
   C. Most radiation exposure in the U.S. is from nuclear plants.
   D. Some dentures are made with radioactive materials.

6. Which of the following is not true?

   A. With time, all radioactive materials will become non-radioactive.
   B. There is little people can do to protect themselves from radiation.
   C. Radiation exposure can be reduced by shielding materials.
   D. Radiation levels always decrease as you move away from the source.

7. A material that is good to be used as radiation shielding is

   A. concrete.
   B. lead.
   C. water.
   D. any of the above.

8. The safety systems of nuclear power plants include

   A. the containment building housing the reactor.
   B. radiation monitors inside and outside.
   C. filters in the ventilation system.
   D. all of the above.

9. Which of the following is false?

   A. Any amount of radiation exposure you receive is extremely dangerous.
   B. Low levels of radiation exposure do not effect you right away.
   C. Scientists very precisely understand the long-term effects of low-level radiation.
   D. High levels of radiation can be, but are not always, fatal.

10. Which of the following are fissionable atoms?

   A. Uranium-235
   B. Plutonium-239
   C. Cadmium
   D. Both A and B but not C.

11. Man-made radiation is more dangerous than naturally occurring radiation. This statement is

A. always true.
B. false because man-made radiation comes in three types, the same as natural radiation.
C. sometimes true, depending on the type of man-made radiation.
D. false because they have the same health hazard potential.

12. A nuclear power plant

A. can never cause a nuclear explosion.
B. could cause a nuclear explosion if there is a meltdown.
C. could cause a nuclear explosion if cooling water is lost.
D. could explode like a nuclear bomb at almost any time.

13. If a person is exposed to radiation they become radioactive

A. forever.
B. until they die.
C. for a little while.
D. not at all.

14. Nuclear power plants cause about what percent of the acid rain in the United States and Canada?

A. None
B. 25%
C. 50%
D. Almost 100%

15. If 10,000 people are exposed to 1000 millirems of radiation, how many would be expected to contract a fatal cancer?

A. Almost all of them.
B. Between 500 and 1000, possibly 2000.
C. About 100 of them.
D. One is likely, but none is possible.

GO

Continue on to the next section

PART II - ATTITUDES TOWARD NUCLEAR ENERGY

Read the directions then go on to the questions.

Directions

Read each statement. After reading the statement, choose the letter of the answer that most closely matches your feeling toward that statement. Mark the space on the answer sheet that indicates your answer for each statement.

16. I would live near a nuclear power plant.

A. Strongly Agree B. Agree C. Neutral D. Disagree E. Strongly Disagree

17. Worldwide use of nuclear energy should be decreased.

A. Strongly Agree B. Agree C. Neutral D. Disagree E. Strongly Disagree

18. The use of nuclear power should grow in the United States.

A. Strongly Agree B. Agree C. Neutral D. Disagree E. Strongly Disagree

19. The public blows fear of radiation out of proportion.

A. Strongly Agree B. Agree C. Neutral D. Disagree E. Strongly Disagree

20. Nuclear energy is harmful to the American way of life.

A. Strongly Agree B. Agree C. Neutral D. Disagree E. Strongly Disagree

21. Oil is better than nuclear power for making electricity.

A. Strongly Agree B. Agree C. Neutral D. Disagree E. Strongly Disagree

GO

Continue on to the next section

PART III - BEHAVIORS AND INTENTIONS SCALE

Read the directions then go on to the questions.

Directions

The following statements are a list of possible activities which an individual might engage in either for or against nuclear power.

Read each statement. If you have done that activity in the past, choose answer A. If you plan to do it, but have not yet done it, choose B. If you do not presently plan to do it but you would do it, choose C. If it is unlikely but possible that you might do the activity, choose answer D. If you are reasonably sure you would never do the activity, choose answer E.

22. Write a letter to the editor, a congressman or other public person.

A. Have done B. Intend to do C. Would do D. Might do E. Would probably never do

23. Participate in a nuclear energy discussion among friends.

A. Have done B. Intend to do C. Would do D. Might do E. Would probably never do

24. Participate in a public discussion about nuclear energy.

A. Have done B. Intend to do C. Would do D. Might do E. Would probably never do

25. Start a discussion about nuclear energy.

A. Have done B. Intend to do C. Would do D. Might do E. Would probably never do

26. Attend a meeting of a pro or antinuclear group.

A. Have done B. Intend to do C. Would do D. Might do E. Would probably never do

27. Attend public meetings on nuclear energy.

A. Have done B. Intend to do C. Would do D. Might do E. Would probably never do

28. Help to organize a meeting about nuclear energy.

A. Have done B. Intend to do C. Would do D. Might do E. Would probably never do

29. Make a public speech or present testimony on a nuclear issue.

A. Have done B. Intend to do C. Would do D. Might do E. Would probably never do

30. Attend a demonstration about nuclear energy.

A. Have done B. Intend to do C. Would do D. Might do E. Would probably never do

31. Help to organize a demonstration about nuclear energy.

A. Have done B. Intend to do C. Would do D. Might do E. Would probably never do

32. Contribute money to a pro-nuclear or anti nuclear organization.

A. Have done B. Intend to do C. Would do D. Might do E. Would probably never do

33. Help to write a newsletter for a pronuclear or antinuclear group.

A. Have done B. Intend to do C. Would do D. Might do E. Would probably never do

34. Participate in civil disobedience to affect a nuclear issue.

A. Have done B. Intend to do C. Would do D. Might do E. Would probably never do

35. Vote for a candidate or ballot issue based on how it would affect nuclear energy use in your area or this country.

A. Have done B. Intend to do C. Would do D. Might do E. Would probably never do

36. Run for office mainly due to feelings about nuclear energy issues.

A. Have done B. Intend to do C. Would do D. Might do E. Would probably never do

37. Put a bumper sticker for or against nuclear energy on my car.

A. Have done	B. Intend to do	C. Would do	D. Might do	E. Would probably never do

GO

Continue on to the next section

PART IV - ANXIETY SCALE

Read the directions then go on to the questions.

Directions

Read each statement. After reading a statement, decide how often you have the feeling described. Choose the answer that most closely indicates how often you have the feeling described in the statement.

38. I worry about nuclear power.

    A. Never B. Rarely C. Sometimes D. Often E. Constantly

39. Thoughts of nuclear power plants frighten me very much.

    A. Never B. Rarely C. Sometimes D. Often E. Constantly

40. I have uncontrollable fears about nuclear power plants.

    A. Never B. Rarely C. Sometimes D. Often E. Constantly

41. Nuclear power depresses me.

    A. Never B. Rarely C. Sometimes D. Often E. Constantly

42. I have trouble accepting the use of nuclear power.

    A. Never B. Rarely C. Sometimes D. Often E. Constantly

43. Talking about nuclear power gives me a feeling of tightness in my stomach.

    A. Never B. Rarely C. Sometimes D. Often E. Constantly

44. I worry about a nuclear accident that may be possible even though it is not likely to happen.

    A. Never B. Rarely C. Sometimes D. Often E. Constantly

STOP

Follow the instructions you have been given for turning in the test

NUCLEAR ENERGY ASSESSMENT BATTERY

ANSWER KEY

Knowledge Subscale

1. D	6. B	11. B
2. C	7. D	12. A
3. B	8. D	13. D
4. A	9. A	14. A
5. C	10. D	15. D

Score: +1 for each correct answer.

Attitude Subscale

16. A	18. A	20. E
17. E	19. A	21. E

Rate each item +5 in the direction indicated by the key answer.

If A is indicated:	If E is indicated:
A = 5	A = 1
B = 4	B = 2
C = 3	C = 3
D = 2	D = 4
E = 1	E = 5

Score: total of the points from each item. The higher the score, the more pronuclear is the subject's attitude.

Intention/Behavior Scale

All items 22 through 37

A = +5 B = +4 C = +3 D = +2 E = +1

Score: total of the points from each item.

<<<Optional Scoring>>>

This method produces separate Behavior and intention scores for each subject.

Behavior Scale

Score items 22 through 37 as +1 for each item answered A.

Score: total of the points from each item.

Intention Scale

Score items 22 through 37 according to:

B = +4
C = +3
D = +2
E = +1

Score: Total the points and divide by the number of items (22 - 37) to which the subject did not answer A.

Anxiety Scale

All items 38 through 44

A = +1
B = +2
C = +3
D = +4
E = +5

Score: total of the points from each item.